



The **topics** and **types of questions** examined in this Achievement Standard. Use this sheet to plan and organise your study so that you cover everything that is required.

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1.8 RIGHT-ANGLED TRIANGLES

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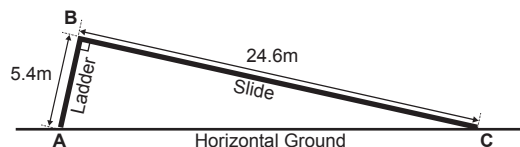
Solve right-angled triangle problems

1.8 1. Solve right-angled triangle problems

A

- using Pythagoras' Theorem
- using trigonometric ratios (does not include finding length of the hypotenuse)

► A diagram of the water slide at the adventure park is shown below.

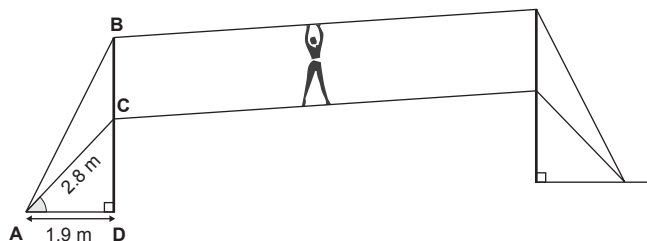


The ladder, AB, is 5.4 m long. The slide, BC, is 24.6 m long.

Calculate AC, the distance between the bottom of the ladder and the bottom of the slide.

► A high-wire confidence course is built as shown in the diagram.

The post BD is vertical. AB and AC are support wires. AD is level ground. AC = 2.8 m. AD = 1.9 m.



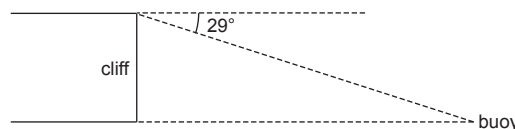
- Find CD, the height of C above the ground.
- Find angle DAC, the angle the support wire, AC, makes with the level ground.

1.8 2. Solve practical problems in 2D

M

- the right angled triangle may need to be identified and extracted from the diagram
- using trigonometry to find the length of the hypotenuse

► The top of a cliff is 35 m above sea level. A buoy floating in the sea is observed by looking down through an angle of 29° from the top of the cliff. [The angle of depression = 29° .]



What is the distance from the top of the cliff to the buoy?

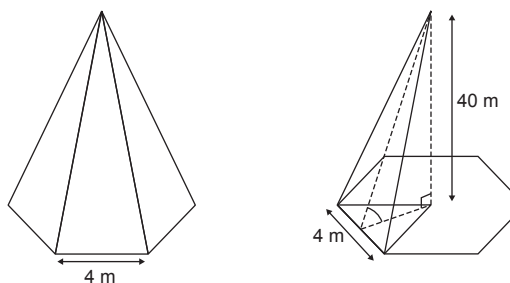
1.8 3. Solve practical problems in 3D

M

► A church has a vertical spire of height 40 metres.

The base is a horizontal regular hexagon, with sides of 4 metres as shown in the diagrams.

[A regular hexagon is a polygon made up from 6 equilateral triangles.]



Calculate the angle between each triangular face of the spire and the horizontal hexagon base.

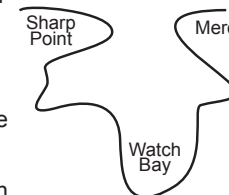
1.8 4. Problems involving bearings and grid references

M

► Mere is watching a small boat travel from Sharp Point to Watch Bay. Watch Bay is a distance of 12 km away at a bearing of 180° from Mere.

Sharp Point is a distance of 8 km from Mere at a bearing of 270° .

Find the bearing of Sharp Point from Watch Bay. Justify your answer.



1.8 5. Solve extended practical problems

E

- problems may be presented in words without a diagram
- problems may involve a 3D situation involving at least two triangles

► If there is no wind blowing, rain falls vertically at 9 metres per second (m per s). The wind blowing makes the rain come down at an angle. Joe and Kerry measure the angle of the falling rain at the same time.

To Joe, the rain appears to be falling towards the east at an angle of 51° to the vertical. To Kerry, the rain appears to be falling towards the south at an angle of 32° to the vertical.

Find the speed of the wind.

